SPECIFICATION AMENDMENTS

Please substitute the following corrected paragraphs:

[0024] (Amended) The probes provide signal inputs to the monitor. The function of the monitor is to generate an output signal, referred to as a "permit signal," when all of the compartments are empty, i.e., the level of any retained fuel is beneath the bottom sensors 22. This monitor also deenergizes the permit signal when the level of fuel, in any compartment, reaches an OPV probe 20 or an unacceptable pressure condition is present in any compartment. Additionally, the monitor may control an audible 33 (see Figs. 2 and 6) or visual alarm or control an internal valve through which product is being unloaded from a tank compartment during a vacuum condition.

[0026] (Amended) In addition to controlling the loading of fuel in the manner described, the ROM 26 is provided with an indicator panel 29 (Fig. 2) for indicating the status of the system. A series of LEDs or other lights ~~30~~ 31 are mounted on the panel 29 to indicate the overfill status of the top sensors of each compartment. Similarly, a series of LEDs or other lights 32 is provided to indicate the retain status of the bottom sensors. When an OPV probe 20 is actuated, the corresponding light, for the compartment in which that sensor is located, is illuminated. If there is retained fuel, which has actuated a bottom sensor 22, the corresponding light, for the compartment in which that sensor is located, is illuminated. The LEDs may include dual-color LEDs to indicate a normal status such as green to indicate that the probe is working, red to indicate a wet probe or pressure/vacuum

problem, flashing red to indicate an open wire or probe, or short, and no output to indicate that a compartment has not been configured.

[0031] (Amended) Referring to Fig. 6, a functional block diagram of the ROM system is generally indicated by reference numeral 26. ROM system 26 is a microprocessor controlled system utilizing one or more microprocessors to interpret inputs from various probes and control the output of the permit signal to the loading rack system. Additionally, ROM system ~~100~~ 26 provides status indicators and other outputs which may be used to control audible alarms 33 and other systems. In the preferred embodiment, the microprocessor may include one or more Atmel ATtiny26 8-bit microcontrollers with 2K bytes of flash memory.

[0032] (Amended) ROM system 26 may include input processing 102, output processing 104 and control processing 106. The input processing 102 receives conditioned input from OPV probes ~~20~~ 108, retain probes 110, other probes 112 and auxiliary inputs 114 from brake interlocks, other pressure sensors, etc., for example. Input signal conditioning 116 is provided by a resistive voltage divider network to control the input voltage levels. The input processing 102 takes the probe inputs, and converts them into flags indicating the type and state of each input. At this point the channel-to-channel dynamic short detection is provided and short conditions are also stored as state information. The input processing 102 sets status flags which are read by control processing to decide what should be done by the various outputs and displays, and stores the results of these decisions. The output processing 104 reads this decision data to execute the required output conditions to control the LEDs,

output of the permit signal to the loading rack interface 118, auxiliary output drivers 120, and to override miscellaneous controls 122 such as filling a partially filled tank, for example.

[0039] (Amended) Referring to Figs. 8a and 8b, the Update Input States routine is called, block 204. The Update Input States routine starts, block ~~281~~ 218, by resetting the system state flags and reading the input states, block 220, of all inputs to the input processing block 102 (Fig. 6). If any change is detected, decision block 222, the waveform data is updated, block 224, saved in the waveform timing data storage, block 226, and the routine ends and returns, block 228, to the ROM Main routine. If there is no change detected, decision block 222, the routine ends and returns, block 228.

[0041] (Amended) Referring to Figs. 8a and 8d, the Update Short Detection routine is called, block 208, and starts, block 250, by testing the input waveforms from waveform testing data storage, block 230, for transitions from a high logic level to a low logic level, or from a low logic level to a high logic level, block 252. The input waveforms are read from the waveform timing data storage (Fig. 8b, block 226), as indicated by continuation block 230. The system compares a transition of one probe with the input of all other probes to determine if any other transition occurred at the same time, which could indicate a short. If more than one transition is detected, decision block 254, the transmission count is updated, block 260, and stored in the common transition counts table, block 258. If the counts exceed a predetermined maximum indicating that a short between probes has been detected, decision block 262, the system state flags are read from the system state flags table (Fig. 8c, block 244), as indicated by continuation block 248, and the system state flags are

updated to include the short status, block 264. The routine then returns to the ROM Main routine, block 266. If the number of transitions is not greater than one, decision block 254, the transition count is cleared, block 256, and stored in the common transition counts table, block 258. The routine then exits, block 266.

[0043] (Amended) Referring to Figs. 8a and 8f, the Update Permit State routine is called, block 212, which starts, block 284, by reading all input status information, block 286, from the system states flag table as indicated by continuation block ~~248~~ 268, and the output state flags table (Fig. 8e, block 274), as indicated by continuation block 282. If all inputs are valid, decision block 288, which indicates that the probe is dry and present, and there is no over-pressure or over-vacuum condition, the permit LED is turned on, block 290, and illuminated, block 292. Next, the rack outputs are enabled, block 294, and the permit relay is energized, block 296. If all inputs are not valid, decision block 288, the permit LED is turned off, blocks 298 and 292, the rack outputs are disabled, block 300, and the permit relay is deenergized, block 296. The routine then returns to the ROM Main routine as indicated by block 302.